

Remarks

Entry of the amendments, reconsideration of the application, as amended, and allowance of all pending claims are respectfully requested. Upon entry of the amendments, claims 1-33, 36-47 and 49-51 are pending.

The above amendments are being made to ensure certain features of applicants' claimed invention are clear and consistent, and not in acquiescence to any of the rejections. For instance, applicants are explicitly reciting in the independent claims that a resource is locked using one type of locking strategy, in response to the determining indicating the relationship is a containment-based relationship; and a resource is locked using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship. Support for these amendment can be found throughout the application (e.g., pages 10-11), and therefore, no new matter is added.

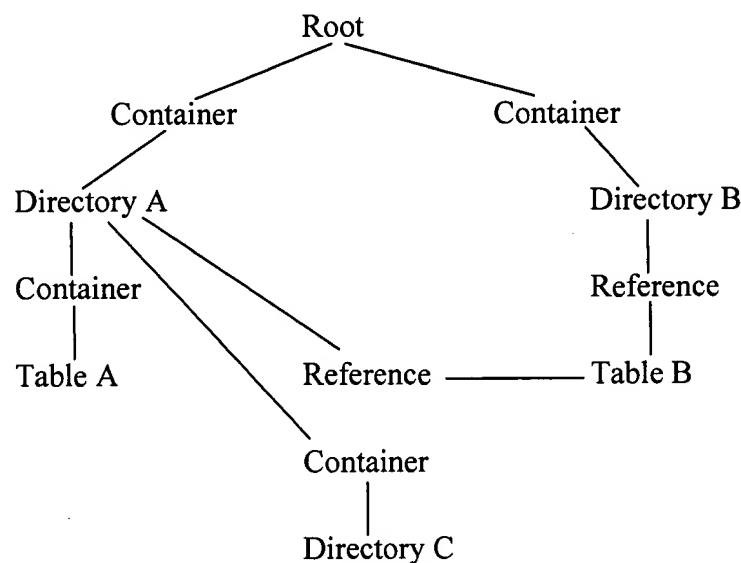
Moreover, the dependent claims have been amended to provide consistency, and new dependent claims 49-51 have been added to explicitly claim further aspects of applicants' invention. Again, support for these amendments may be found throughout the specification (e.g., pages 10-11), and therefore, no new matter has been added.

In the Office Action, dated October 18, 2005, claims 1-10, 21-23, 34, 35, 36, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. (U.S. Patent Application Publication 2002/0010711) in view of Soltis et al. (U.S. Patent No. 6,493,804); claims 11-14, 24-27 and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Soltis et al. and further in view of Shaughnessy (U.S. Patent No. 5,555,388); and claims 15-20, 28-33 and 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Soltis and further in view of Annevelink (U.S. Patent No. 5,448,727). Applicants respectfully, but most strenuously, traverse these rejections to any extent deemed applicable to the amended claims for the reasons below.

In one aspect, applicants' invention is directed to the efficient locking of resources of a global data repository. A locking facility is provided that enables concurrent access to a complex data structure, while minimizing the lock acquisition necessary to access a particular resource of

that complex data structure. As one example, the complex data structure is a data repository that includes a plurality of resources (e.g., tables, directories). The repository has a hierarchical topology, and there are various relationships among the resources of the repository and the locks of the repository. As examples, the relationships of the resources may include containment-based relationships and reference-based relationships.

One example of such a repository is depicted in FIG. 4 of applicants' application and reproduced below for the Examiner's convenience.



The type of locking relationship that exists depends on the particular relationship between the resources. For example, if the relationship between the resources is a containment-based relationship, then the locking acquisition is referred to as chained locking. On the other hand, if the relationship is a reference-based relationship, then the locking acquisition is referred to as a reference-based locking strategy.

To minimize the locking needed, the locking strategy selected for a particular resource depends on the relationship between the resource and at least one other resource. For example, if Table A is to be locked, and since Table A has a containment-based relationship, a chained locking acquisition is used. In contrast, if Table B is to be locked, and since Table B has a reference-based relationship, then a reference-based locking strategy is used, as one example.

In one particular example, applicants claim a method of managing the locking of resources of a data repository (e.g., independent claim 1). The method includes, for instance, determining whether a relationship between one resource and another resource of a data repository is a containment-based relationship or whether the relationship is a reference-based relationship, wherein the data repository includes a hierarchical structure of a plurality of resources, the hierarchical structure including one or more resources having a reference-based relationship and one or more resources having a containment-based relationship; locking at least one resource of the one resource and the another resource using one type of locking strategy, in response to the determining indicating the relationship is a containment-based relationship; and locking at least one resource of the one resource and the another resource using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship.

Thus, in one aspect of applicants' claimed invention, a determination is made as to whether the relationship between resources is a containment-based or a reference-based relationship. Then, in response to the determining indicating that the relationship is a containment-based relationship, at least one resource is locked using one type of locking strategy. Further, in response to the determining indicating the relationship is a reference-based relationship, at least one resource is locked using another type of locking strategy. This is very different from the teachings of the references, either alone or in combination.

For example, while Nakanishi describes locking of nodes, there is no description, teaching or suggestion of one or more elements of applicants' claimed invention. For instance, there is no description, teaching or suggestion in Nakanishi of containment-based relationships, and therefore, there is no description, teaching or suggestion of a hierarchical structure comprising one or more resources having a containment-based relationship, as claimed by applicants.

Applicants respectfully submit that the relationships described in Nakanishi are not containment-based relationships. The parent-child relationships and hyperlink relationships cited in the Office Action are not containment-based relationships, but instead reference-based relationships. There is no description at all in Nakanishi of containment-based relationships.

Moreover, even if Nakanishi did have resources with containment-based relationships, there is still no description, teaching or suggestion in Nakanishi of determining whether a relationship between one resource and another resource is a containment-based relationship or whether the relationship is a reference-based relationship, as claimed by applicants. That is, there is no such determination made in Nakanishi.

Further, applicants respectfully submit that there is no description, teaching or suggestion in Nakanishi of locking at least one resource of the one resource and the another resource using one type of locking strategy, in response to the determining indicating the relationship is a containment-based relationship. There is no such determining, and therefore, no locking in response to the determining in Nakanishi. There is no description, teaching or suggestion in Nakanishi of locking a resource using a particular locking strategy, in response to a determination that the relationship is a containment-based relationship. This is not described in Nakanishi. Instead, in Nakanishi, locking is performed based on a given rule. For instance, as described in paragraph 59, locking may be based on a rule that locks an adjacent node group, or in paragraph 72, it is indicated that the rule is to lock the children nodes, or in paragraph 79, the rule is to lock the parent nodes. There is no description, teaching or suggestion in Nakanishi of locking a resource using one type of locking strategy, in response to the determining indicating that the relationship is a containment-based relationship, as claimed by applicants. Again, there is no determination of a containment-based relationship, and there is no locking in response to that determining.

Yet further, Nakanishi does not describe, teach or suggest locking a resource using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship. Even if examples of reference-based relationships are mentioned in Nakanishi, there is no determining that a given relationship is a referenced-based relationship, and then locking using a particular strategy, in response to that determining. Instead, the locking in Nakanishi is in response to certain provided rules, and not in response to a determination that the relationship is reference-based. Thus, Nakanishi fails to describe, teach or suggest applicants' claimed element of locking at least one resource of the one resource and the another resource using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship.

Since Nakanishi fails to describe, teach or suggest at least one of the following: a containment-based relationship; a hierarchical structure comprising one or more resources having a reference-based relationship and one or more resources having a containment-based relationship; locking at least one resource of the one resource and the another resource using one type of locking strategy, in response to the determining indicating the relationship is a containment-based relationship; and locking at least one resource of the one resource and the another resource using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship, applicants respectfully submit that Nakanishi does not describe, teach or suggest one or more aspects of applicants' claimed invention.

Further, Soltis does not overcome the deficiencies of Nakanishi. For instance, Soltis fails to mention different types of relationships and does not differentiate between different types of relationships. There is no discussion in Soltis of whether a relationship is a containment-based relationship or a reference-based relationship. This is not discussed in Soltis. Thus, Soltis does not make any determination as to the type of relationship, as claimed by applicants.

Moreover, since Soltis fails to teach or suggest determining whether a resource has a containment-based relationship or a reference-based relationship, it follows that Soltis does not describe, teach or suggest locking at least one resource of the one resource and the another resource using one type of locking strategy, in response to the determining indicating the relationship is a containment-based relationship, or locking at least one resource of the one resource and the another resource using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship. There is no analysis in Soltis of determining the type of relationship of a resource to be locked (i.e., whether it is containment-based or whether it is reference-based), and then selecting the locking strategy based on that determination. Soltis does not even mention containment-based relationships or reference-based relationships, much less make any decisions based on such relationships. Thus, applicants respectfully submit that Soltis does overcome the deficiencies of Nakanishi.

Since neither Nakanishi nor Soltis describes, teaches or suggests at the very least one or more of the following: containment-based relationships (both fail to even mention containment-based relationships); a hierarchical structure comprising one or more resources having a reference-based relationship and one or more resources having a containment-based relationship;

locking at least one resource of the one resource and the another resource using one type of locking strategy, in response to the determining indicating the relationship is a containment-based relationship; and locking at least one resource of the one resource and the another resource using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship, the combination also fails to teach or suggest these claimed elements. Neither Nakanishi nor Soltis makes any mention of locking a resource using a locking strategy that depends upon whether a determined relationship is a containment-based relationship or a reference-based relationship. This is missing from both references, and therefore, from the combination, as well. Thus, for at least these reasons, applicants respectfully submit that their invention is patentable over the combination of Nakanishi and Soltis.

Moreover, applicants respectfully submit that the combination of Nakanishi and Soltis is improper. For example, there is no teaching or suggestion in the references themselves to make the combination or modification suggested in the Office Action. It is well known that:

It is insufficient to establish obviousness that the separate elements of the invention existed in the prior art; absent some teaching or suggestion, in the prior art, to combine the elements. Arkie Loures Inc. v. Gene Lareau Tackle Inc., 43 USPQ 2d 1294, 1297 (Fed. Circ. 1997)

Justification for the combination is stated in the Office Action, as follows:

Nevertheless, Soltis discloses a data repository comprises a hierarchical structure of a plurality of resources (FIG. 5). Therefore, it would have been obvious for one of ordinary skill in the art, at the time the invention was made, to implement Nakanishi's hierarchical structure of resources as a data repository to store all the documents because the data still be able for accessible to all users to perform the necessary editing. (Page 4 of the Office Action.)

Again, applicants respectfully submit that the above justification does not indicate where the references expressly teach the combination. There is no teaching in the justification or in Soltis of a hierarchical structure comprising one or more resources having a reference-based relationship and one or more resources having a containment-based relationship, as claimed by applicants. Further, Nakanishi fails to teach this structure.

Yet further, there is no teaching in the justification or in Soltis of using a locking strategy to lock a resource in which the locking strategy depends on whether the relationship between resources of a data repository is determined to be a containment-based relationship or a reference-based relationship. Further, Nakanishi makes no mention of using a locking strategy that depends on whether a determined relationship is a containment-based or a referenced-based relationship. Thus, the references themselves do not teach or suggest the combination.

Based on the foregoing, applicants respectfully submit that the combination of Nakanishi and Soltis is improper, and even if proper, the combination does not teach or suggest at least one or more of applicants' claimed elements of a hierarchical structure comprising one or more resources having a reference-based relationship and one or more resources having a containment based relationship; locking at least one resource of the one resource and the another resource using one type of locking strategy, in response to the determining indicating the relationship is a containment-based relationship; and locking at least one resource of the one resource and the another resource using another type of locking strategy, in response to the determining indicating the relationship is a reference-based relationship. Thus, applicants respectfully submit that claim 1 is patentable over the combination of Nakanishi and Soltis.

In addition to the above, applicants respectfully submit that the other independent claims are patentable over the combination of Nakanishi and Soltis for at least the same reasons as provided herein. Further, the dependent claims are allowable for the same reasons as the independent claims, as well as for their own additional features. For example, dependent claim 49 explicitly recites that the one type of locking strategy comprises a chained locking strategy and the another type of locking strategy comprises a reference-based locking strategy. Neither of these strategies, as claimed, is described, taught or suggested in any of the references, either alone or in combination. Thus, applicants respectfully submit that dependent claim 49 is patentable over the cited references.

Moreover, the other cited references do not overcome the deficiencies of Nakanishi and Soltis. For instance, neither Shaughnessy nor Annevelink describes, teaches or suggests at least applicants' claimed elements of determining whether a relationship between one resource and another resource of a data repository is a containment-based relationship or a reference-based relationship, and locking at least one resource using one type of locking strategy, in response to

the determining indicating a containment-based relationship, and locking at least one resource using another type of locking strategy, in response to the determining indicating a reference-based relationship. Since each of the applied references fails to describe, teach or suggest at least these claimed elements, applicants respectfully submit that the combination (*assuming arguendo* the combination is proper) also fails to describe, teach or suggest one or more of these claimed elements.

For all of the above reasons, applicants respectfully request an indication of allowability for all claims pending herein.

Should the Examiner wish to discuss this case with applicants' attorney, please contact applicants' attorney at the below listed number.

Respectfully submitted,

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